APPENDIX B

EMPLOYMENT OF AIRCRAFT IN DESERT OPERATIONS

The desert is probably the most severe of all environments in which aviation units must operate. Standard operating procedures for desert operations are different from areas having an abundance of contrasting terrain and substantial vegetation. This appendix describes some special considerations when employing aircraft in desert operations.

AIR OPERATIONS

Air combat operations that rely on heavy vegetation and varying contour terrain need to be flexible enough to incorporate different methods of camouflage and terrain flight techniques. The varying types of sand have a tremendous effect on operations-vast flat areas afford unlimited visibility, dunes are hard to distinguish at night, blowing sand impairs visibility and presents flight and maintenance problems, and surface composition affects the choice of landing zones, maintenance sites, FARPs, and operating bases. Additionally, low-hovering and taxiing aircraft generate blowing sand and dust that can cause aircrews to lose outside visual reference, and, if performed near other equipment, present additional maintenance problems for that equipment.

Air operations are not the only area affected by the desert environment. Aviation ground operations may require flexibility and modification to work around the heat and the effects of the terrain. Aircrews must resort to instrument flight during duststorms. Sand also causes excessive wearing, pitting, and eroding of aircraft components.

In certain areas, the desert, with its relatively level terrain and shallow compartments, contains few highly distinguishable terrain features to mask aviation forces. Formations of two or more aircraft can be seen 10 kilometers away because the dark airframes contrast against the desert sand. Aviation units normally deploy their aircraft along routes and may need to consider widely dispersed formations. Aviation forces can make maximum use of deception techniques during periods of limited visibility.

Air cavalry assets can conduct reconnaissance and security operations over great distances in the desert because of the lack of vegetation and relief. Even when they are sand painted, armor vehicles stand out starkly against the sand. When combined with traditional target acquisition principles, such as dust signature and movement, these factors make it easier to acquire and engage armored and mechanized forces well out of range of their main guns.

Aeroscouts flying nap of the earth (NOE) cannot necessarily find the enemy more easily than ground observers. Stationary targets are the most difficult to see as there is little to draw the observer's attention: Therefore, aeroscouts must use caution to avoid blundering into enemy air defense weapons. The aircraft should land at a distance of 5-10 kilometers from the area of interest, and the observer should dismount and scan the area for suspected enemy. The observer must remain in contact with the pilot by using a portable radio. The process should be repeated at varying intervals until contact is made.

Attack helicopter battalions (ATKHBs) are a potent force in desert warfare. If they are employed quickly and violently, maximum results can be obtained both in offensive and defensive operations. They are best used where a quick concentration of combat power is needed. A desert environment presents excellent target acquisition and engagement possibilities. Attack assets must remain dispersed to provide security. Mission planning that incorporates flexibility is a key ingredient in the successful employment of ATKHBs.

Terrain flying and desert navigation require continuous concentration. Due to lack of terrain and poor reference points, the aviator may rely on dead reckoning, self-contained navigation equipment, and radio navigational aids. As light decreases, the ability to judge distances accurately is degraded and visual illusions become more common. Because of glare, haze, and frequently blowing sand, it maybe difficult to detect changes in terrain and the horizon.

Attack helicopters should move from assembly areas to battle positions (or holding areas if necessary) over attack routes that will provide whatever cover and concealment and prominent terrain features necessary to assist in navigation and to decrease the possibility of detection. Attack helicopters may have multiple routes for ingress and egress. Route reconnaissance, premission planning, and prebriefs will maximize the benefits to route planning in desert operations.

The weather in desert regions can be extremely unpredictable. Sandstorms, accompanied by constantly fluctuating wind speeds, may reduce visibility from in excess of 50 kilometers to zero in less than five minutes. Pilots must be carefully briefed on prevailing weather conditions before takeoff. Warning of any expected variations in conditions must be transmitted immediately to all airborne aircraft.

THE PERFORMANCE OF HELICOPTERS IN HEAT

Aviation personnel must refer to the appropriate aircraft technical manuals to determine aircraft limitations and capabilities in the desert environment. Significant effects on the payload capabilities should be anticipated.

Commanders must develop realistic aircraft utilization procedures based on the environmental effects data provided by aviation staff personnel to obtain the fullest benefit from aviation assets.

Helicopters hovering close to the ground can cause the engine to ingest sand; can cause observation by the enemy due to the formation of dust clouds; or cause disorientation of the pilot due to blowing sand, particularly at night. Helicopters should not be moved under their own power while on the ground, but should be pushed or towed by men or vehicles. Maintenance should be restricted to the minimum time, and should take place on rock or on oiled or wet sand, if available. All apertures (Pitot tubes, for example) of aircraft should be covered when not in use (including helicopter windscreens).

Temperature and humidity have a direct impact on personnel and vehicle performance. Temperature and humidity affect air density. Air density decreases as temperature increases. High temperature and humidity reduce the efficiency of aircraft propulsion and aircraft lift capabilities. Although temperature and humidity may not have a direct effect on a particular operation, extremely high temperatures and humidity will reduce aircraft payloads.